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Taxpayer Self-Inspections, Audits, and Optimal Tax Administration: Evidence from China

(Draft November 2020)

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Abstract: I document an important tax collection practice that is previously unknown to research on tax administration: mandatory taxpayer self-inspections. The practice emerged spontaneously across China in the 1990s and persists to this day despite having no basis in law. If taxpayers report additional liabilities after self-inspections, no penalties are imposed. Unlike tax amnesties, self-inspections are (i) backed up by the threat of government inspections with a significantly higher-than-normal audit probability, and (ii) used as a basic, routine revenue-generation technique. I show that self-inspections represent roughly 50% of the activity in China's "tax inspection" (*jicha*) system and assume even greater importance in the larger "revenue management" (*shuiyuan guanli*) system. Evidence suggests that self-inspections are much more effective at generating revenue than costlier government inspections.

I argue that self-inspections show that the presumed centrality of audits to tax administration cannot rest on audit's effectiveness in raising revenue. Rather, audits, but not self- inspections or tax amnesties, enforce a social/legal norm of truthful reporting. Audits are important only when the state relies on the norm of truthful reporting. Further, I argue that self-inspections highlight limits to the theory of optimal tax administration: where social norms are relevant, the enforcement elasticity of government interventions may be indeterminate. Finally, I suggest that self-inspections can be usefully classified in a scheme that sort enforcement strategies in terms of whether government interventions are (i) based on directly observable information or (ii) respond to taxpayer disclosure of private information. Recent research on building state capacity in developing countries privileges *ex ante* interventions afforded by case (i). But in case(ii), where intervention in compliance is necessarily *ex post*, social norms play a critical role.

Keywords: Audits, enforcement, informal tax collection, self-inspections, tax amnesties, tax compliance, tax administration.

[i] © 2020 by Wei Cui. All rights reserved. Author email: cui@allard.ubc.ca. I am grateful for comments from Christos Kotsogiannis, and seminar audiences at the Northwestern Kellogg Business School, University of Exeter TARC online seminar, and the 2020 National Tax Association Annual Meeting. German Vega Acuña and Xuerui Wang provided excellent research assistance.

Introduction

In the traditional economic literature on tax compliance and enforcement (Andreoni et al 1998, Slemrod and Yitzhaki 2002, Slemrod 2019), audits are taken as the primary manner in which tax administrators exercise the state's coercive power. The probability of audits is determined by government resources as well as the nature of audit selection. Taxpayers rationally choose what to report on their tax returns, on the basis of expectations about the likelihoods of audit and detection, and the magnitude of penalties (Allingham and Sandmo 1972). In this familiar framework, taxpayers are assumed to be subject to a legal obligation to truthfully enter information on tax returns, and audits enforce such obligation.

This paper argues that the assumed centrality of audits to modern tax administration does not fit well with an influential theoretical approach that assesses tax enforcement activities in terms of the marginal cost-revenue-ratio (or the enforcement elasticity of revenue) (Keen and Slemrod 2017). The reason is that we do not know that enforcing the obligation of truthful reporting through audits is superior in terms of such ratio. I show that tax administrators in China often forego enforcing the norms of truthful reporting, so as to raise more revenue at least in the short term. This choice is manifest in many ways, but most strikingly in persistent practices of asking taxpayers to "self-inspect" or "self-audit:" the government induces taxpayers to declare and pay additional tax that they failed previously to declare, by offering the waiver of penalties. Such practices bear analogies to tax amnesties in other countries, but they are carried out in China on a routine basis, as a part of purported audit regimes. In contrast, tax amnesties are understood as infrequent exceptions to the general rule of audits (Andreoni 1991, Bayer et al 2015).

Specifically, I present three sets of facts. First, mandatory self-inspections are very prevalent under China's official "tax inspection" (*jicha*) regime. In terms of measures such as taxpayer coverage, adjustment per inspection, and direct contribution to revenue, self-inspections match or exceed government inspections. The *jicha* regime has often been presented as the Chinese equivalent of tax audits, but the wide use of self-inspections and disregard for what is declared on tax returns render Chinese tax inspections hard to distinguish from informal bargaining for revenue. Second, the conduct of both self-inspections and government inspections is responsive to revenue pressures, suggesting that short-term revenue objectives, rather than deterrence objectives, motivate the use of these collection techniques. Third, under the "revenue management" regime—which is by far the largest arm of Chinese tax administration (though so far neglected by scholarship)—tax administrators also rely on self-audits, even when not under specific pressure to generate revenue. Declining to enforce the norm of truthful reporting simply seems to raise greater revenue and do so more reliably.

Why self-inspections are so effective in raising revenue in China is an important question that this paper does not try to answer. Instead, I focus on documenting the fact that they are, as reflected in the seemingly spontaneous and persistent choices by tax administrators across China to use the technique, even when there is no legal basis for it and despite bureaucratic leaders' admonishment against it. In addition, I propose a conceptual scheme that situates self-inspections in respect of audits and other basic tax administration and enforcement tasks. In this scheme, government interventions in taxpayer compliance can be (i) based on directly observable information, or (ii) respond to taxpayer disclosure of private information. In the former case, *ex ante* interventions are feasible: examples include property tax assessments, pre-populating tax returns, automatically registering taxpayers, etc. In the latter case, interventions are necessarily *ex post*. Recent research on tax administration has

privileged *ex ante* interventions (Kleven et al 2011). But in modern tax systems, tax policy often makes disclosure of private information essential, and therefore interventions in compliance necessarily *ex post*. In such contexts, social norms may play a critical role. I argue that the critical difference between self-inspections and audits lies in that the latter, but not the former, enforces the social and legal norm of truthful reporting. That such a paradigmatic example of tax enforcement as audits may actually be about a social norm suggests that we need to rethink the enforcement v. social norms dichotomy prevalent in the economics literature (Dwenger et al 2016, Besley et al 2019).

This paper contributes to several strands in current research on tax administration and especially on building tax capacity in developing countries. First, economists have recently shown interest in studying a broader range of tasks in tax administration beyond audits, including taxpayer registration (Bruhn and McKenzie 2014, De Giorgi et al 2018, Floridi et al 2019), efforts to increase the rate of return filing (Brockemeyer et al 2019) and the timely payment of taxes (Gillitzer and Sinning 2019), and enforcement against delinquent taxpayers (Ortega and Scartascini 2020). In some sense, improving government performance in all these tasks strengthens state capacity in taxation.[1] However, few have tried to articulate the relationship of these tasks to audits, or an overall framework by which the relative importance of these tasks can be evaluated. If, for example, increasing registration lowers the rate of filing of tax returns (Lediga et al 2020), or decreases the frequency of truthful reporting (Mascagni et al 2020), should we reevaluate efforts at taxpayer registration? One response is to take revenue collection as the ultimate yardstick of success. Although no researcher yet has explicitly applied this approach, it is likely that the theory of optimal tax administration (Keen and Slemrod 2017) will be regarded as relevant.[2] According to this theory, at the optimum, the "ratio of the adjusted marginal cost-revenue-ratio to the enforcement elasticity of evasion" should be equated across different types of government interventions. While this theoretical apparatus is attractive both for its rigor and its off-the-shelf nature, the present paper highlights its limitations when government interventions enforce social norms.

Second, it has long been suspected that informal revenue extraction—tax collection according to not the letters of the law but informal agreements between taxpayers and tax administrators—is more prevalent in developing countries than in developed countries (Gordon 2010, Cui 2015). But informal negotiations with taxpayers are obviously difficult to investigate, resulting in a greater number of theoretical treatments than empirical ones (Franzoni 2000, 2004, Chassang et al 2020).[3] Because taxpayer self-inspections or self-audits represent important types of such informal negotiation, their documentation allows me to provide a rare empirical study of the phenomenon of informal negotiations for tax payments. Although self-inspections may seem to be in tension with rule-of-law norms, they are not necessarily more so than other forms of informal bargaining and settlements used by tax administrators, and it would be *ad hoc* to ignore their efficiency properties because they are normatively problematic.

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[1] The International Monetary Fund (IMF) developed the Tax Administration Diagnostic Assessment Tool (TADAT) that encompasses these and many other tax administration outcomes. The OECD's Tax Administration Comparative Information Series likewise compiles extensive information comparing outcomes in different stages of tax administration.

[2] Basri et al 2020 and Brockemeyer et al 2020 already apply Keen and Slemrod 2017 to developing country contexts, although both applications examine not the choice between different tax administration techniques, but the choice between varying tax administration and changing statutory tax rates.

[3] It is worth noting that the limited theoretical treatments are all offered in the *developed* country context, suggesting a generally important aspect of tax administration practice that nonetheless has stayed at the margin of attention of public economics.

Third, in a rapidly growing literature on property tax collection in developing countries (e.g. Khan et al 2016, 2019, Brockmeyer et al 2020, Weigel 2020), scholars explore both the design of tax administration and trade-offs between policy and administration. It has been insufficiently recognized, however, that property taxation generally does not require taxpayer self-assessment, which renders the norms of truthful reporting—and therefore audits—irrelevant. An implication of this is that state capacity in the form of property tax collection is potentially quite different from state capacity in collecting modern taxes such as income taxes, payroll taxes and VAT (Kleven et al 2016). When the relevant distinctions are made, it may turn out that there is no ready normative framework for assessing how to develop state capacity. Relatedly, a recent political economy scholarship emphasizes the importance of incentivizing civil servants in building state capacity (Khan et al 2016, 2019; Finan et al 2017). It may be difficult to incentivize tax administrators to enforce the norm of truthful reporting, precisely because the establishment of such norm fundamentally lies beyond tax administrators' control. By contrast, outcomes such as taxpayer registration, or even informal negotiations for tax payments, may be more amenable to government control—and consequently, represent more workable metrics for designing bureaucratic incentives. One risk, though, is that such incentives, once put in place, may drive tax administrators further away from enforcing the norm of truthful reporting. A trade-off between incentivizing civil servants and maintaining the norm of truthful reporting may thus emerge. Such trade-off is potentially important for understanding state capacity in taxation.

The remainder of the paper proceeds as follows. Section 1 provides some brief background on tax administration in China, stressing the division between the tax inspection and the "revenue management" systems. Section 2 documents the prevalence of self-inspections in the tax inspection system, and summarizes the origin and evolution of such practice. Section 3 offers evidence that Chinese tax inspections—of both the self-inspection and government inspection varieties—are aimed at revenue generation instead of deterrence. Section 4 then examines outcomes in newly organized audit units in one province that are independent of tax inspection functions. The outcomes suggest that self-audits may well yield more revenue in the short term than government audits—audits enforcing the norm of truthful reporting are not necessarily the most effective government means for raising revenue. This invites the question: what justifies the presumed centrality of audits to tax enforcement? Section 5 lays out a typology of government interventions that encompass audits, tax amnesties and self-inspections, and that justifies viewing taxpayer self-inspections as a form of informal negotiation. It also identifies an analogy of audits to liability rules in general. Section 6 explains why audits' centrality can only be made sense of by the desirability of the norm of truthful reporting, and discusses the implications of this explanation for the literatures on optimal tax administration and state capacity. A brief Conclusion follows.

1. Tax inspection v. revenue management in Chinese tax administration

The organization of Chinese tax administration has received little scholarly attention (even within China). What is relatively well-known is that, before 2018, tax administration was bifurcated into the State Tax Bureau (*guoshui* or GS) and the Local Tax Bureau (*dishui* or DS) systems (Gordon and Li 2005, 2012; Chen 2017). Each collected different taxes, and the national tax agency, the State Administration of Taxation (SAT), controlled the budget and personnel of the GS system but not of the DS system (budget and personnel in the latter are decided at the provincial level). However, many

organizational features are also shared among the GS and DS systems: for instance, most key findings about self-inspections in this paper apply to both systems.[4]

Cui 2015 documents two additional structural features of Chinese tax administration (and common to both the GS and DS branches). First, it is "bottom-heavy" in staffing: out of a national total of approximately 780,000 employees, only 0.1% occupy the national office (SAT), and only 5% staff are employed by provincial bureaus. By contrast, 15% of the total staff works at city/prefecture bureaus, and 80% at county/district bureaus or (below-county) branch bureaus and offices. This bottom-heavy structure allows a dense network of grassroots tax offices that make tax administrators relatively accessible to taxpayers. Second, frontline tax administrators are relatively unspecialized. The relatively small jurisdiction of each tax office partially explains this outcome—as it precludes the economy of scale that is often required for specialization—but other factors, such as the need for internal performance measurements, also explain the lack of specialization (Cui forthcoming).

The feature of Chinese tax administration that is important for this paper, however, is the insulation of tax inspections from the rest of the tax bureaucracy. Most tax bureaus that are large enough to afford some degree of specialization—essentially tax bureaus at the county level and above—house a tax inspection (*shuiwu jicha*) bureau/division.[5] Tax inspection units were first introduced in the late 1990s and firmly established by the early 2000s. Because of initial aspirations for building modern audit capacity, such units enjoy elevated personnel rank, and the national Tax Inspection Bureau—an entity within the SAT—commands resources for producing the China Tax Inspection Yearbook (separate and distinct from the China Taxation Yearbook). In existing scholarship, tax inspection is generally assumed to be the Chinese equivalent to audits, as well as to be representative of Chinese tax administration (e.g. Fan and Liu 2020). Empirical studies of Chinese tax administration (mostly in Chinese) almost uniformly draw on data from the Tax Inspection Yearbooks.

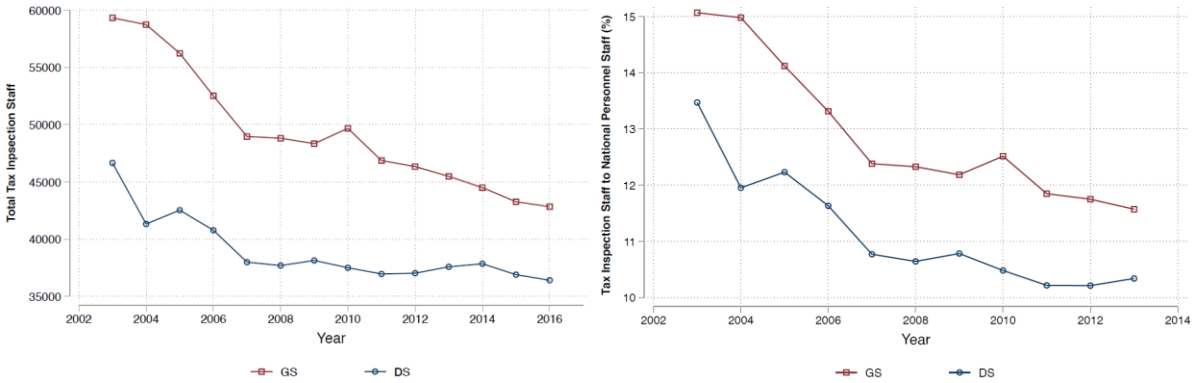
Yet these assumptions are problematic. Figure 1 illustrates, separately for the GS and DS systems, the time trends of the total number of tax inspectors across China and the proportion of tax inspectors to the total tax administration workforce. In both absolute and relative terms, tax inspection personnel size shrank over time: tax inspection represented only 10-12% of total tax administration personnel in recent years, and even at their heights in 2003, the average ratios of inspection staff to total tax administrators hardly exceeded 15%.[6] Figure A.1 displays measures of the same proportions at the provincial level for 2003-2007. While there are differences across provinces, provinces that have greater than 20% of their tax administrators occupying tax inspector roles are rare outliers. A significant minority of provinces have fewer than 10% of their tax staff stationed at tax inspection units.

Figure 1 National trend in tax inspection staff, total and relative to total tax administration staff

[4] Chapter 1 in Cui forthcoming also emphasizes that the differences between the GS and DS systems are multi-dimensional, regionally heterogeneous, and do not lend to easy generalization.

[5] In the GS system, the total number of inspection bureaus ranged between 73% and 81% of the total number of bureaus at the county level and above, while for DS the range was between 74% and 83%.

[6] The decline of tax inspection in recent years also manifests in the number of taxpayers inspected and the contribution of tax collected through tax inspections to total revenue (Figure 2 below). This decline occurred during a period with no major change in the organizational structure of tax bureaus: the total number of inspection bureaus has held steady since 2002. The decline instead likely resulted from a shift in the government's emphasis from tax inspections in the late 1990s to a focus on the "revenue management" system since 2004.



This raises an obvious question: What do the remaining bulk (>85%) of Chinese tax administrators do? The answer is that they are deployed mainly within function units referred to as "revenue management" (*shuiyuan guanli*, literally "revenue source management"). Correspondingly, the most typical role of an employee in a frontline tax agency is as a "revenue manager" (*shuishou guanli yuan*). Revenue managers carry out taxpayer registration, taxpayer services, account management, delinquency collection, among other functions. They are also responsible for ensuring that taxpayers timely file tax returns and make tax payments. In this process they inevitably carry out certain quasi-audit functions, and the corresponding coverage is much wider than the tax inspection system (as detailed in Section 4 below).[7] However, these quasi-audit functions have traditionally borne obscure labels such as "taxpayer evaluations" (*shuishou pinggu*), "risk management" (*fengxian guanli*), and "risk response" (*fengxian yingdui*).

The revenue management system has rarely been documented in prior literature; a description of its details is beyond the scope of this paper.[8] But even acknowledging its existence raises certain threshold questions for understanding tax audits in China. Researchers have asserted or implied that audits *are* conducted in China—for example by claiming that data come from tax returns that have been audited, or that taxpayers behave in certain ways due to the risk of audits. But are the "auditors" tax inspectors or revenue managers? On the one hand, since it is unclear that even the existence of the revenue management system has been recognized in scholarly research, little evidence has been offered on whether, and how, revenue managers conduct audits. On the other hand, suppose that the claim is that audits are carried out by tax inspectors. Such claim needs to be reconciled with two facts: (1) tax inspectors do not regularly examine or even have access to tax returns (which are processed and monitored by revenue managers); (2) data on tax inspection (being only a small arm of the tax bureaucracy) may be unrepresentative of the overall operation of Chinese tax administration.

In any case, the following sections will show, using novel, hand-gathered data, that neither the tax inspection nor the revenue management regime does much by way of what one would normally understand as audits.

2. Taxpayer Self-Inspections: Origin, Evolution and Prevalence

[7] As a consequence, taxpayer may be examined separately by revenue managers and tax inspectors in the same period (and by such personnel separately from the GS and DS systems), while these different auditors may fail to share information among themselves.

[8] Readers are referred to Chapters 1, 3 and 5 in Cui forthcoming.

China's Tax Inspection Yearbooks make available, in tabulated form, provincial-level data about outcomes from tax inspections from the late 1990s up to 2007. Variables include the number of taxpayers inspected, the number of taxpayers found to have additional tax liabilities upon inspection, aggregate additional tax liabilities assessed (referred to as "adjustments" below), and the late payment interests and penalties in respect of such taxpayers. Such tabulated data ended in 2007. Consequently, most empirical studies of tax inspections rely on pre-2008 data. However, the Tax Inspection Yearbooks published in 2009 and later years contain extensive reports produced by provincial tax inspection bureaus, from which data on tax inspection outcomes can be hand-gathered. A drawback of the provincial reports is that, each year, only a subset of all provinces produces reports that are published in the Yearbook. But the benefit of reading these provincial reports is that much more empirical as well as institutional details are available than the data tables pre-2008. Specifically, for many province-years, one can locate separate information on inspection outcomes for two types of inspections: taxpayer self-inspections and inspections carried out by officials. By contrast, tabulated data from the Tax Inspection Yearbooks up to 2007 does not distinguish between taxpayer self-inspections and government inspections. Our documentation of the practice of self-inspections (including for pre-2007 years) draw on this publicly available—but previously neglected—archival material.

a. Evolving rationales and procedures of self-inspections

Mandatory taxpayer self-inspections have no ground in Chinese law and is indeed little known outside the circle of tax inspectors. At a first approximation, self-inspections are reviews carried out by taxpayers themselves about whether they have paid taxes according to official requirements. Such reviews are entirely separate from taxpayers' normal return-filing and compliance activities. They are carried out upon the order, and sometimes following the instructions, of local tax inspectors. Notably, self-inspections are performed under the incentive that any additional tax liabilities reported do not attract penalties.

Official reports on taxpayer self-inspections can be traced to the first half of the 1990s, when China's tax system was newly established. The level of taxpayer non-compliance then was very high, and tax administrators were particularly eager to extend audit coverage, both to collect tax and to create deterrence. Finding low-cost audit techniques was crucial for achieving this goal. Asking taxpayers to self-inspect appeared to emerge as one core technique. Because there were "not enough tax inspectors"—a common complaint found in subnational tax bureau reports—taxpayers were asked to inspect themselves. Self-inspections were "coupled with" government inspections, which were labeled "selective inspections" (*choucha*) or "intensive [or key] inspections" (*zhongdian jiancha*). The terminology implies that self-inspections were broader in coverage but came with a lighter touch. This reduced the cost of inspections so much that, in reports from this period, it was sometimes claimed that for a given sector targeted for inspection, the coverage of self-inspection reached "100%".

By the early 2000s, provinces across China began to develop and publish guidance for the practice of self-inspections. According to such guidance, the technique of taxpayer self-inspection was generally not used in investigations based on whistleblowers and other referrals involving specific allegations of violations. These latter investigations, however, always represented a small portion of tax inspection. Self-inspection *was* used, by contrast, for all inspections with broad coverage. Broad-coverage inspections included "special-issue examinations" (*zhuanxiang jiancha*), which may target particular sectors (e.g. real estate developers, gas stations, peddlers' markets) or particular tax issues

(e.g. wage withholding, withholding tax on royalty payments to foreign licensors) for inspection.[9] They also include examinations of particular taxpayer segments (e.g. large taxpayers). Altogether, broad-coverage inspections make up greater than 80% of all inspections conducted by tax inspection bureaus. In these areas of activity, self-inspections thrived.

Official reports on self-inspections typically describe a pre-inspection stage during which one or more of the following things happen. First, tax inspection teams would widely advertise an upcoming inspection among the targeted taxpayer population. These publicity initiatives would stress the importance of paying tax according to law. Second, tax inspectors may arrange individual or group meetings with taxpayers to outline the tax law and policies that inspectors expect to enforce. Third, in some places, taxpayers may receive a formal notice setting out self-inspection procedures and taxpayer rights. Taxpayers selected for self-inspection would then have a limited period of time for carrying it out (e.g. 10 days to a month), at the end of which additional tax liabilities would be declared. Sometimes but not always, the additional tax liabilities are declared on a "self-inspection report".

Self-inspection campaigns are followed by government inspections of select taxpayers. Tax bureaus often specify minimum ratios of taxpayers to be subjected to subsequent government inspections—as high as 20% or 30%, and much higher than the coverage ratio of tax inspections in general. Sometimes, selection for post-self-inspection government inspections is explicitly said to be randomized. But it is more commonly claimed that a subset of taxpayers are selected for "intensive" government inspections "depending on the outcome of self-inspections". The criteria used for such selection, however, is rarely spelled out.

There are reasons to be skeptical that tax inspectors carry out meaningful selection based on the veracity of self-inspection reports. For one, such reports are too crude to support effective selection. As illustrated in Figure 2, they typically merely list additional tax liabilities for various types of taxes, and contain no information about items relevant for determining the basis of taxpayers' liability. They are thus dramatically simpler than regular tax returns. Tax inspectors who only access self-inspection reports, therefore, would have little ground for audit selection. Moreover, where government reports imply that there is a selection process, such selection is described not as specific to each inspection campaign (and thus ad hoc), rather than using a general strategy/algorithm that the government has in store. Some tax administrators all but explicitly suggest that there is very little effective selection either prior to or following self-selection.[10]

Equally importantly, tax inspection campaigns, by nature, rarely hinge on what taxpayers had previously declared on their tax returns. Inspection targets are generally not selected on the basis of their own tax returns, and are instead based on issues and features common to groups of taxpayers. Yet outside inspection campaigns, Chinese tax inspectors do not even routinely see tax returns.[11]

[9] The choice of issues differs from year to year, and may depend on either SAT instructions (i.e. national campaigns) or subnational bureaus' own initiatives.

[10] The National Tax Inspection Bureau Chief in 2013 urged that "the inspection of key revenue-source firms should not be allowed to go their own way…It is necessary to focus on one or two firms before or during firm self-inspections. It is only by understanding typical cases that tax authorities could foresee possible tax issues, and therefore better guide self-inspections." 2014 Tax Inspection Yearbook, p 16.

[11] This raises the uneasy question: how do Chinese tax inspectors even gain experience in detecting evasion behavior on tax returns?

Figure 2 Illustrative Example of a Taxpayer Self-Inspection Report

纳税自查报告表

The reliance on taxpayer self-inspections has always attracted controversy and critique. The Chief of the SAT Tax Inspection Bureau remarked in 2014:

> "[Self-inspections] reduce burdens on taxpayers, save inspection costs, improve inspection efficiency and lead to positive results. At the same time, some local tax authorities over-rely on self-inspections. They give too much leeway to taxpayers during self-inspections and hinder strict law enforcement, which, to a certain extent, has weakened the authority of law enforcement…In carrying out inspections of key tax-source enterprises, local tax authorities need to clarify the policies and firms' responsibilities during self-inspections. It is also necessary to follow up with key inspections. Without key inspection as the backup, self-inspection will be mere formality, and the authority of tax inspection will be undermined…In the future, aside from inspections of key tax-source enterprises or industry-specific inspections, the approach of self-inspection should not be adopted."[12]

There is little evidence, however, that the practice of self-inspections subsequently subsided.

b. The prevalence of taxpayer self-inspections in the tax inspection regime

The next few figures illustrate findings from this hand-gathered data. Each figure combines the tabulated data up to 2007 from the Tax Inspection Yearbooks and the hand-gathered data from 2008 to 2016. The latter series represent self-inspections and government inspections respectively in red and blue.[13] Figure 3a shows the evolution of the average number of inspected taxpayers in each province. There is a pronounced trend of decline before 2008; after 2008, inspection coverage held roughly steady. Notably, at least on average, the number of taxpayers covered by "self-inspections" dominate coverage by government inspections in every year after 2008. Figure 3b shows similar trends for

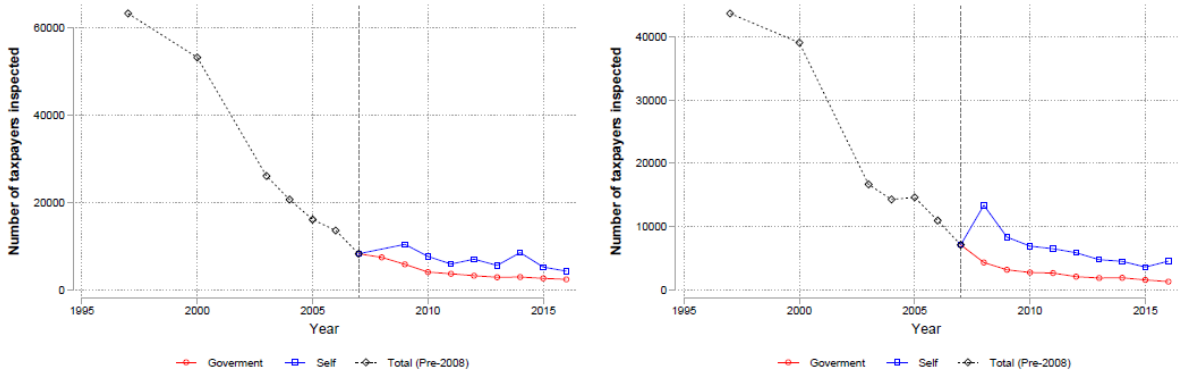
[12] Sun Ruibiao, Speech at the National Tax Inspection Conference, 25 February 2014, 2015 Tax Inspection Yearbook p 9.

[13] The pre-2008 data is based on complete provincial panels, while the post-2008 data is based only on a subset of provinces (the composition of which also changes from year to year). The comparability of pre-2008 and post-2008 trends is thus only approximate.

another measure of tax inspection outcome—the ratio of revenue collected directly through inspections to overall tax revenue intake. The ratio is calculated (separately for DS and GS) at the provincial level and then averaged across provinces. The average revenue contribution of tax inspections was in the 5-8% range in the late 1990s, but dropped to less than 2% by 2007. The ratio again held steady since 2008. Notably, the average revenue contributions of self-inspections and government inspections are similar.

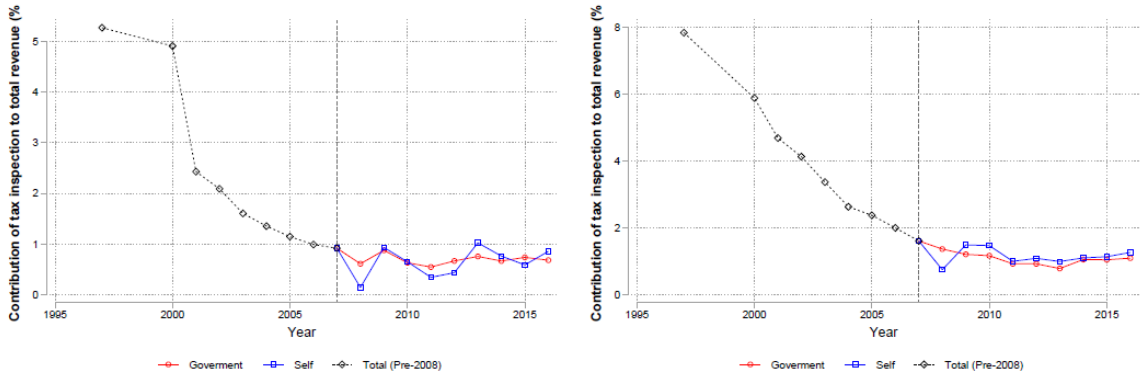
Figure 3c depicts trends in average taxpayer adjustment per inspection (again first calculated at the province level and then averaged across China). There has been a substantial increase in such adjustments in the past decade—most likely driven by an increasing focus on large taxpayers. Meanwhile, while there are large fluctuations in the average adjustment from self-inspections, the overall trends and magnitudes of inspection outcomes are similar to government inspections.

Figure 3a Taxpayer coverage: self v. government inspections



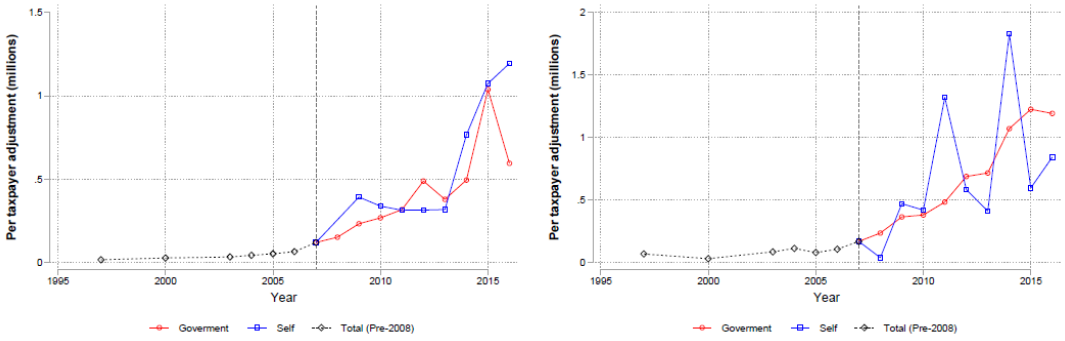
(a) GS (b) DS

Figure 3b Contribution to total tax revenue: self v. government inspections



(a) GS (b) DS

Figure 3c Per taxpayer adjustment: self v. government inspections



(a) GS (b) DS

Figures A.2 and A.3 present in greater detail the comparison of taxpayer self-inspection and government inspection outcomes for each of the provinces that provided relevant data. They show first that patterns observed in Figure 3 are not driven by some outlier province. Instead, in respect of four outcome variables (taxpayers inspected, total adjustments, contribution to total tax revenue, and per taxpayer adjustment), self-inspection came out ahead in most provinces. Only in a relatively small number of cases (e.g. DS with respect to taxpayer inspected) did self-inspection take on a smaller role. Second, there is a reasonable amount of inter-provincial variation, especially in the DS system. This is consistent with the fact that the reliance on self-inspections is by no means dictated by law.

To summarize: since 2008, taxpayer self-inspections have been at least as important as government inspections in China's tax inspections operations. Reports on pre-2008 practice in the Tax Inspection Yearbooks indicate that self-inspections were even more prevalent before 2008, implying that self-inspections have been a constant feature of China's tax inspection system.

3. Self-Inspections and Revenue Pressure

The most important virtue of self-inspections may be that they generate revenue at low costs to tax administrators. In prior research, Chinese scholars have used three measures of fiscal pressure experienced by Chinese provincial governments to study the impact of such pressure on tax collection: (i) the GDP growth rate in a province, (ii) the revenue growth rate in the province, and (iii) the difference between (ii) and (i). The logic is that lower GDP growth threatens lower revenue growth; both spur tax collectors to intensify collection when they face revenue targets that are not adequately adjusted to changes in the economy. Moreover, lower revenue growth relative to GDP growth (i.e. a lower positive or a larger negative difference) may be interpreted as lackluster performance in tax collection—and therefore further incentivize collection efforts. Researchers have reported significant correlations between these variables with tax inspection outcomes (Zhou et al 2011, Bai et al 2019).

I test such correlation using new data hand-gathered from the Tax Inspection Yearbooks for 2008-2016. In particular, I examine two measures of tax inspection outcomes: the number of taxpayers inspected normalized by provincial population, and the ratio of revenue collected from tax inspections to total tax revenue. Each indicates the importance of tax inspections in a given province and in a given year, and can also be interpreted to capture tax collection efforts. While prior research has analyzed pre-2008 tax inspection outcomes, I use post-2008 data. Moreover, I separately examine outcomes for self-inspection and government inspection.

Table 1 shows the results of regressions of the taxpayer inspected variable on each of the fiscal pressure variables. For each fiscal pressure variable, a baseline coefficient corresponding to government inspections is reported. An interaction between a self-inspection and the fiscal variable, representing self-inspection's difference from the baseline, is also reported. The results for the GS and DS systems are separately displayed. Columns (2), (4) and (6) incorporate year fixed effects and present the preferred specification.

It can be seen that once year fixed effects are controlled for, the coefficients are generally of the predicted signs: the lower the GDP growth rate, the lower the revenue growth rate, and the lower the revenue growth rate relative to the GDP growth rate, the larger number of taxpayers inspected. For DS bureaus, the baseline coefficients for GDP growth and revenue growth rates are significant, while the differences between self and government inspections are not statistically significant. For GS bureaus, while government inspections are not significantly correlated with fiscal pressure, self-inspections do bear significant negative correlations with the revenue growth rate and with the gap between revenue and GDP growth. It appears that revenue pressure leads GS tax inspectors to expand self-inspection coverage more.

Table 1

Correlation between tax inspections per capita and the listed variables. GS data, 2008-2016.

	(1)	(2)	(3)	(4)	(5)	(6)
Self × GDP growth rate (%)	-5.346	-5.003				
	[4.026]	[3.908]				
	(0.185)	(0.201)				
GDP growth rate (%)	3.826*	-4.303				
	[2.151]	[3.151]				
	(0.076)	(0.173)				
Self × Diff. betweeen Revenue and GDP growth rates (%)			-3.295*	-3.676**		
			[1.923]	[1.866]		
			(0.087)	(0.050)		
Diff. betweeen Revenue and GDP growth rates (%)			-0.104	-0.100		
			[0.558]	[0.543]		
			(0.852)	(0.853)		
Self × Revenue growth rate (%)					-2.827*	-3.788**
					[1.627]	[1.608]
					(0.083)	(0.019)
Revenue growth rate (%)					0.143	-0.225
					[0.545]	[0.539]
					(0.793)	(0.676)
Year FEs		X		X		X
Observations	406	406	406	406	406	406
Adj R-squared	0.215	0.282	0.215	0.281	0.214	0.285
F-test	0.000	0.000	0.000	0.000	0.000	0.000

Correlation between tax inspections per capita and the listed variables. DS data, 2008-2016.

	(1)	(2)	(3)	(4)	(5)	(6)
Self × GDP growth rate (%)	1.516	2.401				
	[2.242]	[2.220]				
	(0.499)	(0.280)				
GDP growth rate (%)	1.626	-4.255**				
	[1.386]	[2.093]				
	(0.241)	(0.043)				
Self × Diff. betweeen Revenue and GDP growth rates (%)			1.281	1.323		
			[1.329]	[1.291]		
			(0.335)	(0.306)		
Diff. betweeen Revenue and GDP growth rates (%)			0.531	-1.813		
			[0.852]	[1.164]		
			(0.533)	(0.120)		
Self × Revenue growth rate (%)					1.045	1.242
					[1.012]	[0.987]
					(0.302)	(0.209)
Revenue growth rate (%)					0.672	-2.456**
					[0.645]	[1.041]
					(0.298)	(0.019)
Year FEs		X		X		X
Observations	442	442	442	442	442	442
Adj R-squared	0.115	0.167	0.114	0.164	0.118	0.170
F-test	0.000	0.000	0.000	0.000	0.000	0.000

Table 2 displays results for to contribution to total tax revenue. Panel A uses 1997-2007 data, which does not distinguish between self and government inspections. The results confirm previous findings by Chinese scholars: the coefficients with the measures of fiscal pressure are all of the predicted negative sign, and are generally statistically significant. Panel B uses 2008-2016 data on self-inspections, and DS serves as a baseline while the difference of GS from DS is reflected in the coefficients of an interactive term. The negative correlation with GDP growth rate is statistically significant, and GS tax inspectors generally appear to be more sensitive to revenue pressure than DS inspectors.

Table 2

Correlation between Contribution of tax inspection to total revenue and the listed variables. Total inspections, 1997-2007.

	(1)	(2)	(3)	(4)	(5)	(6)
GS × GDP growth rate (%)	0.079***	0.079***				
	[0.021]	[0.019]				
	(0.000)	(0.000)				
GDP growth rate (%)	-0.144***	-0.053***				
	[0.015]	[0.016]				
	(0.000)	(0.001)				
GS × Diff. betweeen Revenue and GDP growth rates (%)			0.009	0.006		
			[0.012]	[0.010]		
			(0.463)	(0.564)		
Diff. betweeen Revenue and GDP growth rates (%)			-0.010	-0.014*		
			[0.010]	[0.009]		
			(0.310)	(0.094)		
GS × Revenue growth rate (%)					0.035*	-0.003
					[0.021]	[0.020]
					(0.092)	(0.859)
Revenue growth rate (%)					-0.071***	-0.028*
					[0.016]	[0.017]
					(0.000)	(0.093)
Year FEs		X		X		X
Observations	490	490	490	490	560	560
Adj R-squared	0.391	0.519	0.258	0.505	0.108	0.260
F-test	0.000	0.000	0.000	0.000	0.000	0.000

Correlation between Contribution of tax inspection to total revenue and the listed variables Self-inspections, 2008-2016.

	(1)	(2)	(3)	(4)	(5)	(6)
GS × GDP growth rate (%)	-0.022*	-0.027**				
	[0.013]	[0.013]				
	(0.094)	(0.039)				
GDP growth rate (%)	-0.010	-0.022*				
	[0.008]	[0.012]				
	(0.249)	(0.071)				
GS × Diff. betweeen Revenue and GDP growth rates (%)			-0.001	-0.007		
			[0.006]	[0.007]		
			(0.826)	(0.262)		
Diff. betweeen Revenue and GDP growth rates (%)			-0.002	0.004		
			[0.005]	[0.006]		
			(0.682)	(0.507)		
GS × Revenue growth rate (%)					-0.001	-0.006
					[0.004]	[0.005]
					(0.806)	(0.271)
Revenue growth rate (%)					-0.003	0.002
					[0.004]	[0.005]
					(0.395)	(0.725)
Year FEs		X		X		X
Observations	379	379	379	379	379	379
Adj R-squared	0.134	0.161	0.116	0.141	0.122	0.144
F-test	0.000	0.000	0.000	0.000	0.000	0.000

Previous research has shown that the occurrence of tax amnesties in the U.S. states responds to state fiscal pressure (see Bayer et al 2015 and literature reviewed therein). Chinese scholars have suggested that the intensity of tax inspections in China also correlates with fiscal pressure—a more unusual result, which moreover is inconsistent with the idea of that tax inspections should aim at creating deterrence. The analysis above brings these parallel findings together, suggesting that Chinese tax inspections in general are more oriented towards generating revenue rather than deterrence—

which would explain the wide adoption of self-inspections. I will return to the comparison of self-inspections with tax amnesties in Section 5 below.

4. Preference for Self-audits in the Revenue Management System

The last set of evidence on the use of negotiated payments in Chinese tax administration I will present comes from recent efforts by tax agencies in some provinces to formalize audit functions within the revenue management system. Since the mid-2000s, verifications of adequate tax payments and truthful reporting on tax returns have been carried in the revenue management system under the rubric of "taxpayer evaluation." But such "evaluation" is performed by revenue managers who also engage in taxpayer services, account management, delinquency management, and other tasks with respect to the same assigned population of taxpayers. Agents often exercise individual discretion over the weights allocated to these different tasks. By the government's own assessment, the result is a perennially low level of specialization and the under-development of centralized risk detection capacity. Consequently, some provinces rolled out tax administration reform in the past decade, with the purported aim of enhancing specialization and "risk management". A typical reform strategy is to allocate personnel to "risk response" units that do not perform any taxpayer service, account management, or other non-audit functions, and that contact only taxpayers who have been identified by the government's information system as potentially "risky". Such "risk response" units are distinct form traditional tax inspection units, which are left largely intact by the reforms in the revenue management arm. I will use the label "audit" to refer to the operation of these new "risk response" units.

One province that carried out this reform is Jiangsu, a rich coastal province that is also known for high-quality tax administration (by Chinese standards). The specialized audit units in Jiangsu were launched around 2012. I obtained internal reports about the outcomes of the new audit ("intermediate risk response") functions that cover 13 cities and about 10 quarterly periods from 2013 to 2016. During each year between 2013 and 2015, the new audit units engaged in "intermediate response" actions towards over 5% of Jiangsu's business taxpayer population[14]—coverage that is 6-10 times higher than tax inspections' coverage of taxpayers in Jiangsu. Moreover, the new audit function directly resulted in revenue collection equal to about 4% of total tax revenue, which compares favorably with the average of around 1% of contribution to total revenue made by the tax inspection system. A detailed look at Jiangsu' audit outcomes reveals a series of striking facts.

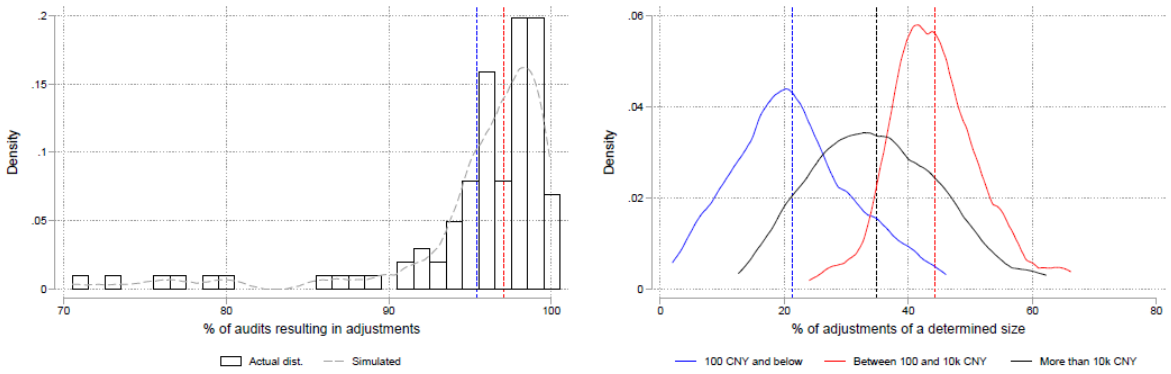
Using international terminology, I refer to additional tax liabilities detected through audits as "adjustments"—as in adjustments to the amounts declared on tax returns. Figures 4(a) and 4(b) show, respectively, the proportion of all Jiangsu audits that resulted in adjustments (sometimes also called the "target rate") and the portion of adjustments of various sizes. Figure 3(a) shows a first striking fact: both the median and mean target rates in Jiangsu's audits exceeded 95%. The target rate of audits is thus extremely high. In terms of amounts, Figure 3(b) indicates that the most frequent group (on average almost 45%) of audits resulted in adjustments of between 100 and 10,000 CNY. Adjustments for over CNY 10,000 is the next largest group (more than 30%). But adjustments for less than CNY 100 still represent a significant portion of audit outcomes—on average over 20% of all audits.

A high target rate could arise for two reasons: the selection of audit targets is very accurate, so that those taxpayers selected for audits are precisely those likely to have underpaid tax; or, most taxpayers underpay tax, so that *anyone* being audited is likely to show unpaid tax liabilities. Several

[14] For "key taxpayers" that represent large sources of revenue, this audit rate averaged 39%.

reasons suggest the latter factor is more relevant. For example, if one compares Jiangsu's new audit regime with its tax inspection regime, the latter ought to be more selective: a tax inspector handles on average only 2 cases a year, whereas a tax auditor in Jiangsu handled on average more than 20 cases a year in 2014. Moreover, tax inspections tend to generate higher adjustments: 75% of tax inspections result in adjustments higher than CNY 10,000, and the mean adjustments per investigation for tax inspections is CNY 1.7 million during the 2013-2015 period, compared to CNY 220,000 for audits. However, even though tax inspection is evidently more selective in its targets, the target rate is not higher than the target rate of audits—and can hardly be, given how high the latter rate is. Therefore, the high target rate of audits cannot be explained primarily by effective audit selection.

Figure 4 Target rates and distribution of audits by adjustment size[15]



(a) Portion of all audits resulting in adjustments. (b) Portion of adjustments of a determined size.

A second striking aspect of Jiangsu's new audit regime relates to the types of audit techniques used. In China, there has not been a tradition of "correspondence audits": the tax agencies are generally located so close to taxpayers—much like post offices—that a more natural means of communication is for in-person meetings at the local tax bureau's office. Most audits start with such a meeting or interview, which in other countries is often referred to as an "office audit" or "desk audit".[16] In Jiangsu, only a very small portion (less than 2%) of cases concluded after such an interview.[17] Figure 5(a) shows that instead, the vast majority of audits (on average about 80%) is completed during a phase called "self-audit" or "*zicha*"—the same term as is used for self-inspections supervised by tax inspectors. That is, the taxpayers report additional amounts of tax payable after a meeting at the tax office, as a result of further "self-examination". Field audits (*shidi hecha*)—where auditors visit the physical premises of taxpayers—represent the third way in which an audit can be completed. However, only 5% of all audits proceed directly to the field audit phase after the office interview; the majority of field audits are initiated only after a self-audit phase (Figure 5(b)).

In other words, the new audit regime in Jiangsu seems remarkably to replicate some of the core features of China's tax inspection system discussed in Section 2. Legally, self-audits and field audits

[15] In Panel (a), the blue line represents the mean and red line the median. In both panels, the distributions report observations of 14 jurisdictions in Jiangsu over 9 quarters in 2014-2016.

[16] If taxpayers adequately answer questions during such an audit, or if the reason for underpayment is successfully identified and agreed upon, an office or desk audit could end right away.

[17] Although no separate statistics are available, my discussion with Jiangsu tax officials indicates that those cases concluding with an office interview usually result in no adjustments.

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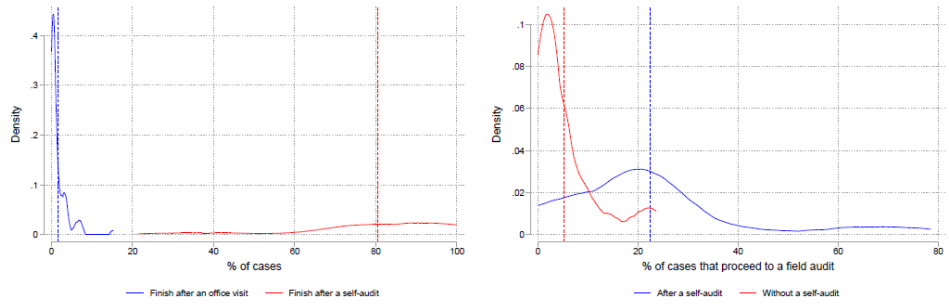
under the audit regime are distinct in the same way as self-inspections and government-inspections are distinct: additional tax liabilities reported through self-audits do not attract penalties but only late payment interests. It is also striking that tax inspection bureaus usually stipulate a minimum ratio—typically 20% or more—of government inspections to self-inspections, so as to incentivize taxpayers under inspection to report previously unreported tax liabilities. The ratio of field audits following self-audits seems to correspond to this minimum ratio.

This resemblance is all the more striking because, unlike the use of self-inspections by tax inspection bureaus, I did not find any explicit instruction within Jiangsu tax agencies for the use of self-audits in the new audit system. This suggests that the wide adoption of self-audits may have emerged contrary to expectations. Moreover, the intent behind the creation of the new audit system was not to (directly) generate additional revenue; it was instead to enforce the norm of truthful reporting (fittingly described as "returning responsibilities to taxpayers.") Finally, since specialized audit functions were newly created, it seems also unlikely that the use of self-audits was justified by the desire to economize on costs.

Figure 5 Relative Frequency of Office Audits, Self-Audits, and Field Audits



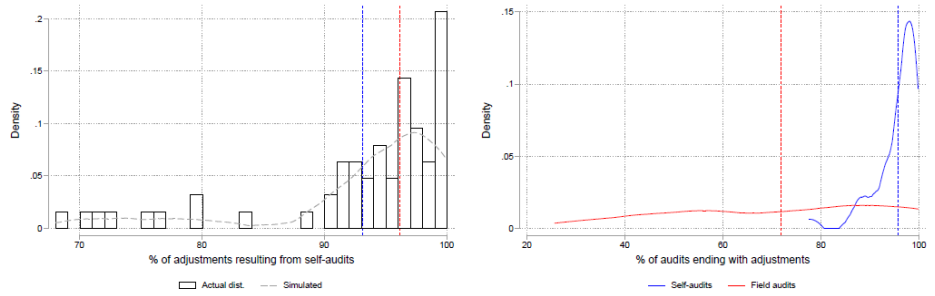
(a) Portion of audits finished after office visits (in blue) and self-audits (in red).

(b) Portion of cases that proceed to a field audit after a self-audit (blue) or without a self-audit (red).

A third set of facts is relevant for assessing why self-audits became the preferred way for Jiangsu tax auditors to conclude their "intermediate risk response." Figure 6(a) shows that on average across periods and cities, aggregate adjustments from self-audits represented around 95% of all adjustments under the new audit regime. Moreover, although I have data only for one year (2014) in this regard, in that year a significantly higher proportion (on average > 95%) of self-audits ended with adjustments than the proportion of field audits ending with adjustments (on average < 75%) (Figure 6(b)).

The effectiveness of self-audits v. field audits can also be compared in terms of the amounts of adjustments in those audits with positive adjustments. On average, 40% of field audits ended with trivial amounts of adjustments (<CNY 100), whereas only 20% of self-audits ended with such amounts (Figure 7(a)); 10% of self-audits generate large adjustments (> CNY 100,000), whereas only 5% of field audits do so (Figure 7(b)). As Figure 7 shows, the outcomes of self-audits are also more consistent in these regards, whereas the outcomes of field audits are much more dispersed. Overall, it is difficult to avoid the conclusion that under Jiangsu's new audit regime, penalty-free self-audits lifted most of the weight.

Figure 6 Self-audits: proportion of total adjustments and likelihood of adjustments

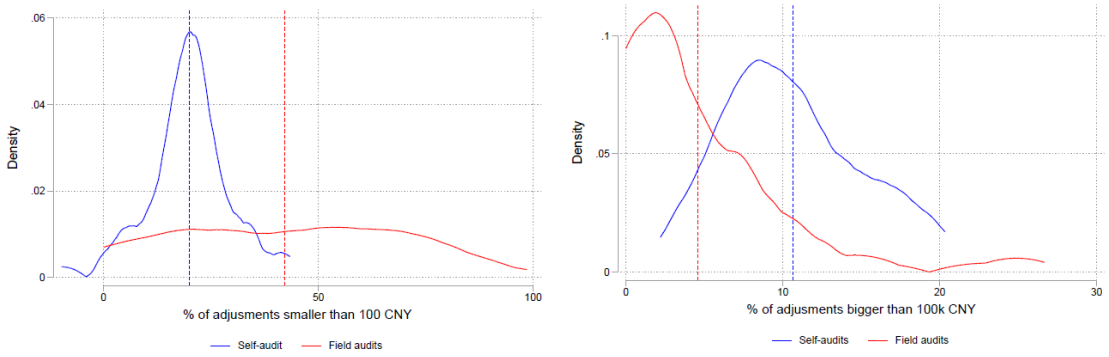


(a) Proportion of aggregate adjustments resulting from self-audits.

(b) Portion of self-audit (in blue) and field visits (in red) resulting in adjustments

In Panel (a), blue line: mean, red line: median.

Figure 7 Size of adjustments: Self-audits v. Field Audits



(a) Adjustments smaller than 100 CNY

(b) Adjustments bigger than 100k CNY

One interpretation of this outcome is that despite the introduction of the new audit regime, tax administrators simply continued to do what they knew how to do well—namely cajoling taxpayers into paying more tax, while imposing penalties very sparingly. In continuing this prior practice, but under a new system of risk response, frontline tax collectors may have experienced several differences. On the one hand, they could tell taxpayers selected for "risk response" that the government's data system had identified them as "risky", implying that tax agencies now possess superior information about taxpayers. This may have enhanced their capacity to extract concessions from taxpayers. On the other hand, because the new audit personnel would not have been assigned to the audited taxpayers on a regular basis (unlike revenue managers), they would have benefitted less from the persistent monitoring of taxpayers.

The potential advantage of superior information about the taxpayers was probably weak, perhaps even in appearance only. It seems that such information did not allow tax administrators to make either frequent or substantial adjustments during field audits. Nor did it embolden them to use penalties more often. In fact, if risk identification was highly unreliable, auditors may well be better off asking taxpayers to self-audit rather than pursuing field audits. Jiangsu tax auditors' strong preference for self-audits over field audits, as well as the evident superiority of self-audits in concluding with more frequent and larger adjustments, are both consistent with the low quality of taxpayer information that

was being used for the province's data analysis. In the absence of reliable information, it is natural that tax auditors would substantially perpetuate pre-existing practice.

5. Audits, amnesties, and bargaining

There are obvious analogies between taxpayer self-inspections (or self-audits) in China and tax amnesties used in other countries. The latter are typically episodes during which governments offer taxpayers a temporary opportunity to declare past unpaid taxes without being subject to penalties for the prior underpayment. Amnesty campaigns are sponsored by tax authorities with some frequency even in developed countries like the United States and Germany (Bayer et al 2015, Langenmayr 2017), and are also quite common in developing countries (Baer and Le Borgne 2008). Governments have been attracted to their use because of low administrative cost and revenue gain—which are the crucial factors that render taxpayer self-inspections attractive to Chinese tax agencies.[18] But policy commentators advise against their routine use: while amnesties may appear to increase revenue in the short term, they are feared to lower compliance in the long term by detracting from the government's deterrence power. The quote above from China's chief tax inspector expresses the same concern about self-inspections. In terms of taxpayer psychology, scholars have posited that amnesties take advantage of the fact that the prospect of audit might "crystalize" after a taxpayer's initial decision to file an inaccurate return: they provide a second chance at compliance to taxpayers who now perceive a greater threat of audit (Malik and Schwab 1991, Bayer et al 2015). Chinese tax self-inspections take place where the government makes an explicit threat of a higher probability of audit, thus can be seen as exploiting the same psychological mechanisms.

The fundamental difference between Chinese self-inspection and taxpayer amnesties elsewhere appears to be that the latter are carried out against some robust background regime of tax audits.[19] Amnesties are recognizable *deviations* from the norm of audits: taxpayers are not exempted from the norm of truthful reporting; they are simply forgiven for lying in the past. What is radical about the Chinese practice is that self-inspections are carried out as an equally important form of tax inspection as government inspections. This implies that amnesty-like techniques may eclipse practices that uphold the norm of truthful reporting. When audits no longer serve as the background practice, however, the character of amnesty-like practices also changes.

Consider Table 3, which illustrates how several tax administration techniques differ along two important dimensions. The first dimension is whether taxpayers are responsible for disclosing private information. The second is whether the government verifies the true liability of taxpayers.

Normal tax audits belong in the upper left cell: that is, they are the product of two components captured by the corresponding column and row—taxpayers are responsible for disclosing private

[18] There are no formal tax amnesties in China, which could be seen as an anomaly given the prevalence of tax amnesties elsewhere—but the wide adoption of self-inspections obviates the need for tax amnesties and therefore explains the latter's absence.

[19] Another potential dis-analogy between Chinese self-inspection and tax amnesties elsewhere is that even a taxpayer that participates in self-inspection and reports a positive additional tax liability may still face a subsequent government audit. By contrast, it is often assumed that taxpayer participating in amnesties will not be further audited (for the same periods). However, this difference is arguably of degree. On the one hand, the ability of Chinese tax administrators to make additional adjustments in the subsequent round of government inspections may be limited. On the other hand, it is unlikely that tax collectors administering amnesty programs in other countries make no judgment about whether participants in amnesty programs fully disclosed prior liabilities.

information, *and* the government verifies true liability. Notably, not all tax collection practices that require the government to verify true liability also require taxpayers to disclose private information. In some prominent areas, such as property tax assessments, the government can directly determine the tax base, without waiting for taxpayer reporting. This type of administrative technique is represented in the upper right cell.

Table 3 Two dimensions of revenue-raising techniques

	Taxpayer accountable for disclosing private information	Taxpayer not accountable for disclosing private information
Government verifies true liability	Normal audits	Direct assessments (e.g. of property tax)
Government does not verify true liability	Tax amnesties (with audits as background)	Pure negotiation

Within this conceptual scheme, tax amnesties may be placed in the lower left cell: taxpayers are still responsible for disclosing private information during an amnesty, but the government foregoes the verification of true liability. Though this represents a deviation from the background norm (captured by the upper left cell) where taxpayers are responsible for disclosing private information in the original filling, it makes sense only against that background.[20] But what if the government does not verify true tax liability, *and* if the taxpayer is not expected to disclose private information? This possibility, represented by the lower right cell of the table, seems interpretable only as a pure form of bargaining for payment, because the legal basis for determining tax liability—taxpayer private information—is neither disclosed by taxpayers nor verified by tax authorities.

Since taxpayer self-inspections in China can occur in respect of all taxes, they do not fall into the upper right cell of Table 3. There are strong reasons not to place self-inspections in the left-hand cells, either: Chinese tax inspectors disregard tax returns not only in the penalty stage but even in the inspection selection stage. Inspection campaigns in general, and self-inspection campaigns in particular, do not hinge on what taxpayers had previously declared on their tax returns—it is as though taxpayers' prior obligations to truthfully report on their returns are irrelevant. Because the background practice of enforcing the norm of truthful reporting is missing, the right cell lower is where self-inspections belong.

Table 3 not only justifies the intuition that self-inspections represent a form of bargaining, but also reminds us that audits are quintessentially an *ex post* form of government intervention: taxpayers declare tax liabilities on tax returns first; tax administrators then act to audit (and punish in the case of violations). Property tax assessments, in contrast, involve governments acting without prior taxpayer action. A variety of other tax administrative tasks may also involve *ex ante* interventions—proactive registration of taxpayers, reminders for filing or payment, or, in some scenarios, even the completion of tax returns (such as when the government "pre-populates" tax returns using third-party information).

One question that can be posed is what governs the choice between *ex ante* and *ex post* government interventions. Though not studied in the tax administration literature, this question is examined in law and economics scholarship in connection with the distinction between property rules

[20] Alternatively, the taxpayer can be thought of as simply being given a second chance to disclose private information, but is faced with a higher probability of audit than was previously threatened. Under this characterization, a tax amnesty is even more clearly parasitic on audit schemes.

and liability rules (Shavell 2004). In the terms of that literature, audits impose a kind of liability rule—tax evasion is not strictly prohibited, taxpayers will simply have to bear the consequences of tax evasion. The choice of liabilities rules over property rules are typically justified on two grounds. First, private parties may possess better information about the costs (including foregone benefits) of avoiding harm: liability rules allow such costs to be weighed against the cost of the harm (Shavell 2004).[21] Second, property rules—rules that simply prohibit harmful actions—are unenforceable because the government lacks the power of observation to make *ex ante* interventions. Since it is generally assumed that there is no social benefit that accrues to tax evasion that is only privately observable, liability regimes such as audits can be justified only by the second type of reason. It must be that the government is not in a position to determine the correct tax liability (in a cost-effective way) without taxpayers first disclosing private information.

It follows from this reasoning that the techniques at tax administrators' disposal for raising revenue are amenable to the following tripartite classification. First, there are techniques that permit *ex ante* government interventions—all of which are contingent on the government's ability to directly observe the tax base (or relevant taxpayer behavior such as registration), and such interventions being *ex ante* cost-justified. Second, where taxpayer information unobservable by the government is relevant, the government can try to foster and enforce a norm of truthful reporting, whereby taxpayers voluntarily disclose private information without interaction with tax administrators. Third, instead of enforcing the norm of truthful reporting, the government can try to develop some bargaining or auction regime to extract private information from taxpayers that is premised on interaction with tax administrators. In such interactions, taxpayer may pay less than the legally required amount (i.e. the amount that the government would collect if it had full information), but subject to floors determined by what tax collectors are able to observe.

6. Truthful Reporting and Optimal Tax Administration

The presumed centrality of audits to tax administration is evident not only in scholarship directly studying audits, but also in literatures on other aspects of tax compliance. For example, research on third party information reporting (Kleven et al 2011, 2016)—and on the distinct phenomenon of "paper trails" allowed by financial institutions (Gordon and Li 2009) and VAT invoices (Pomeranz 2015)—all assume that such practices curb tax evasion by increasing the probabilities of audits or detection upon audits. Similarly, in the scholarly and policy literatures on tax amnesties, the concern is routinely expressed that amnesties may erode the government's deterrence power by undermining audit threats (Baer and Le Borgne 2008, Bayer et al 2015, Langenmayr 2017). In a recent body of scholarship that examines what tax administrators often call taxpayer services—facilitating taxpayer registration (Floridi et al 2019), sending out letter, email, or text reminders about filing tax returns (Brockemeyer et al 2019) or paying overdue taxes (Ortega and Scartascini 2020)—it is also acknowledged that while enhanced services may improve some compliance outcomes, in environments characterized by high non-compliance (e.g. developing countries), more coercive tactics may be required to raise revenue (Carrillo et al 2017). Audits are often explicitly or implicitly taken to belong to such class of coercive tactics.

However, it is far from clear that the importance attached to audits can be justified by their empirically-demonstrated effectiveness in raising revenue. There are few estimates of the "enforcement elasticities" of audits. Estimates of such elasticities relative to other tax administration techniques within

[21] Thus, for instance, pollution is not prohibited but polluters are liable for harms.

the same context seem virtually impossible to find.[22] In the Chinese context discussed here, it seems that the enforcement elasticities of self-inspections, self-audits, or other forms of bargaining for tax payments are often higher than audits.[23] That would explain why budget-constrained tax administrators aiming to achieve revenue targets routinely resort to bargaining techniques.

Section 5 suggested an alternative to taking the choice among different tax administrative techniques as purely based on marginal enforcement elasticities. I claimed that audits impose a type of liability rule. Contrast this with property tax assessments based on market value, where the government's ability to determine market value is no worse (or even better) than that of property owners. In this case, there is no need to conduct audits: taxpayers simply pay the government-assessed value. Similarly, suppose income (e.g. capital gains) or wealth is taxed at a flat rate without regard to personal circumstances, and that it is just as easy for the government to observe the tax base as it is for taxpayers (e.g. financial institutions need to produce the relevant information either way, whether to the government or to individuals). Then the government again would have no need for audits, but can simply collect the tax. In all these cases, the ease of government observation and intervention would eliminate the need for liability rules. *Ex ante* collection would preclude tax evasion, effectively imposing a kind of property rule.[24]

It follows that audits can have a central role in tax administration only if the disclosure of private information by taxpayers is essential to tax design: audits are necessary only if the tax law gives taxpayers something to conceal.[25] But even when private information is relevant, audit is not the only approach to revenue collection: negotiated tax payments is an important alternative. What audit does instead is to foster a norm of truthful reporting, whereby taxpayers voluntarily disclose private information without any interaction with tax administrators.

Critically, the norm of truthful reporting may be a social norm, meaning that it may be enforced by parties other than the government (e.g., employees, managers, and investors may all enforce the norm in the context of a business firm). In this case, audits contribute to maintaining the norm, without the norm being reducible to the deterrence effect of government enforcement alone.

It is commonly agreed that one should not assess audits only by the total adjustments made to audited taxpayers and tax collected directly and immediately from them; one must also consider audit's indirect deterrence effects. But such indirect deterrence effects may be essentially mediated by the social norm of truthful reporting that audits aim to support. In this case, without considering the strength of the social norm sustained, the enforcement elasticity of revenue with respect to audits may not be well defined. For example, if audits fail to make the norm of truthful reporting prevalent, the

[22] Comparisons of elasticities across contexts are difficult to interpret—given that in theory, the enforcement elasticity of one administrative technique may be endogenous with tax policies and other administrative techniques. Basri et al 2020 acknowledges this point in applying Keen and Slemrod 2017.

[23] In tax inspections, assuming 20% self-inspections are followed by government inspections, and similar average adjustment per taxpayer, self-inspections come out ahead >300% even without considering the lower cost of self-inspections for tax administrators. In formalized audits in revenue management, self-audits come out ahead even more compared to field audits.

[24] Whether such *ex ante* intervention is feasible arguably captures the dichotomy between whether taxpayers are "unwilling" or "unable" to cheat (Kleven et al 2011).

[25] Cui 2018 makes this point about third party information reporting: where taxpayer private information is irrelevant, the government could simply asses tax based on third-party information; there would be no need to *verify* taxpayer self-reporting through third-party information.

direct revenue gain from audits may be quite high—because taxpayers are very non-compliant—but still lower than the gain from informal negotiations with taxpayers. On the other hand, if audits succeed to sustain a norm of truthful reporting, the direct revenue gain from audits may be low—because taxpayers are already compliant—but higher than the gain from informal negotiations (e.g. if such bargaining are not acceptable to taxpayers).[26]

The classification of tax administration techniques proposed here—according to whether they involve feasible *ex ante* government interventions or only *ex post* interventions, which in turn depends on the relevance of taxpayer private information—pointed to the importance of the norm of truthful reporting for understanding the centrality of audits. But the classification has another significant implication. Within tax agencies, performance metrics used to design incentives for civil servants must be tied to observable outcomes. The same factors that enable *ex ante* government interventions—observability of outcomes—may also make them tempting to incorporate into performance metrics. For example, it may be easy to incentivize civil servants for property tax assessments because such assessments depend only on tax administrator action (Khan et al 2016, 2019). Enforcement of tax registration requirements may have a similar feature. Conversely, if auditors were to be incentivized, their performance would have to be measured by the amount of adjustments or the number of findings of violations (Di Porto et al 2013), and not by any indirect deterrence effects.

A question can then be raised about whether incentive schemes for civil servants can be incorporated into the theory of optimal tax administration. The answer sometimes may be yes. For example, regular property tax assessments may be viewed as one administration technique, and property tax assessments with performance pay viewed as a distinct one. If the latter has demonstrably lower cost-to-revenue ratio (and higher enforcement elasticity), that is a reason for choosing it. But it's also possible that civil servant incentives not only have marginal effects on revenue but also affect the quality of the bureaucracy or even broader social norms. For instance, taxpayer registration in itself may generate little additional tax revenue, but once incorporated into performance metrics (by virtue of its easy observability), may enhance tax administrator morale and promote a social norm that firms *should be* registered for tax purposes. Conversely, revenue targets may well incentivize tax administrators to raise revenue, but at the cost of behavior (such as informal negotiations) that erode the norm of truthful reporting.

The theory of optimal tax administration recognizes that there are complex relationships between enforcement and tax rate changes—they may be complementary or substitutive. The same, however, is true of relationships among different types of tax administration techniques, e.g. increased tax registration may lower the rate of return filing (Lediga et al 2020). Moreover, these relationships may be determined by larger institutions—be it a well-functioning bureaucracy or a social environment characterized by rule of law—that are themselves important objects of social scientific inquiry. What the Chinese examples of negotiated tax payments show is that these internal dependencies among different administration techniques, as well as the dependencies between such techniques and social norms, may be of first-order significance. Given the centrality of audits to our conception of modern tax administration, and given the recent (largely empirical) interest in a wider range of tax administration

[26] The idea that tax compliance may be sustained by social norms beyond government enforcement is of course not new. For that reason, theorists of optimal tax administration may feel unperturbed by the fact that their theory does not consider such "external factors". If, however, something as central to traditional notions of tax administration as audits is intrinsically tied to such "external factors", so that one cannot offer a satisfactory rationalization of the centrality of audits, the problem seems graver.

techniques and in civil servant incentives, it is important to further identify and acknowledge limits of the standard theory of optimal tax administration.

Conclusion

This paper documented an important tax collection practice that is previously almost unknown to research on tax administration and compliance: mandatory taxpayer self-inspections. If taxpayers report additional tax liabilities after self-inspections, no penalties are imposed. Unlike tax amnesties, self-inspections are backed up by the threat of government inspections with a significantly higher-than-normal audit probability. This practice emerged spontaneously across China in the 1990s and persists to this day despite having no basis in law. I show that self-inspections represent roughly 50% of the activity in China's "tax inspection" (jicha) system and assume even greater importance in the larger "revenue management" (*shuiyuan guanli*) system. Evidence suggests that self-inspections are much more effective at generating revenue than costlier government inspections.

Why self-inspections are so effective in revenue generation requires further exploration, but I argue that it already shows that the presumed centrality of audits to tax administration cannot rest on audit's effectiveness in raising revenue. Rather, audits, but not self-audits or tax amnesties, enforce a social/legal norm of truthful reporting. Audits are important only when the state—unlike Chinese tax administrators—relies on the norm of truthful reporting. If the paradigmatic example of tax enforcement is actually about a social norm, the standard enforcement v. social norms dichotomy in the economics literature needs to be revisited.

I explore implications of the phenomenon of self-inspections for two literatures. First, it highlights limits to the theory of optimal tax administration, which proposes the use of the enforcement elasticity of revenue as a sufficient statistic for choosing the right mix of enforcement and tax rate parameters and for balancing between enforcement tasks. Where social norms are relevant, the enforcement elasticity of government interventions may be indeterminate. Second, self-inspections can be usefully classified in a scheme that distinguishes between tax enforcement strategies in terms of whether government interventions are (i) based on directly observable information or (ii) respond to taxpayer disclosure of private information. In case (i), interventions can be *ex ante*: e.g. property tax assessments, pre-populating tax returns, automatically registering taxpayers. In case (ii), interventions are necessarily ex post. Recent research on building state capacity in developing countries privileges ex ante interventions. But when tax policy makes disclosure of private information essential (and therefore intervention is necessarily ex post), social norms play a critical role. The focus on ex ante interventions may be in tension with sustaining the norm of truthful reporting.

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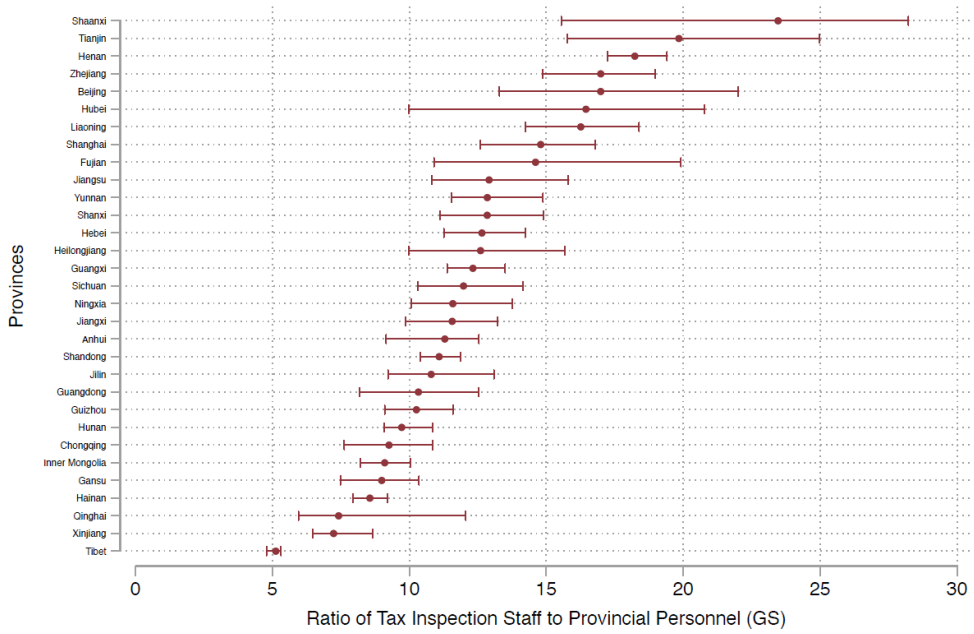
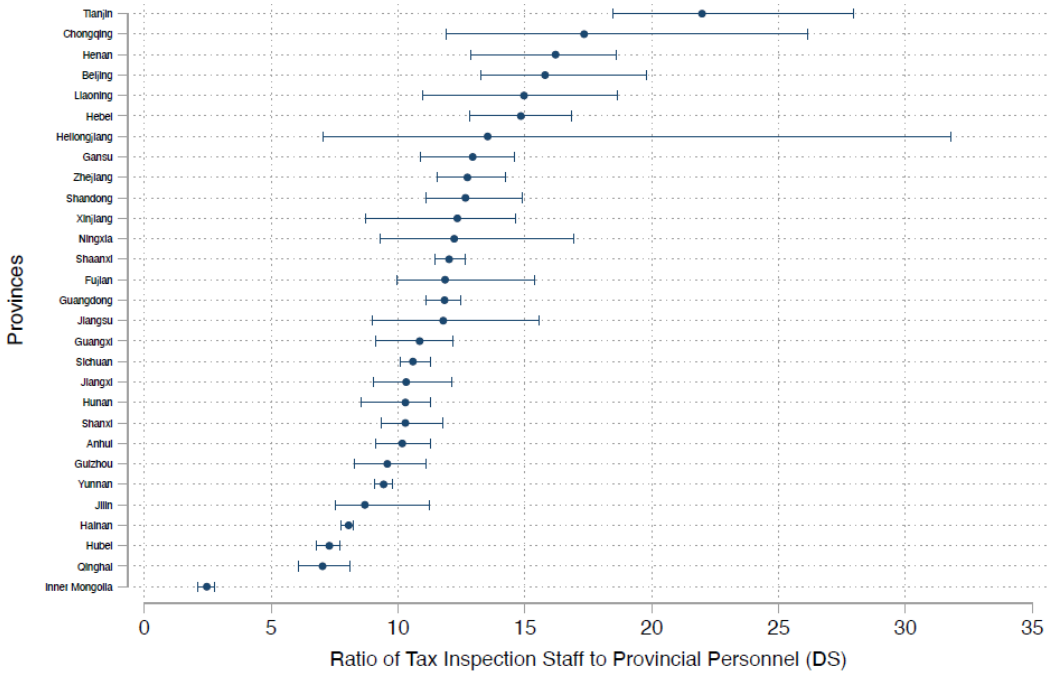
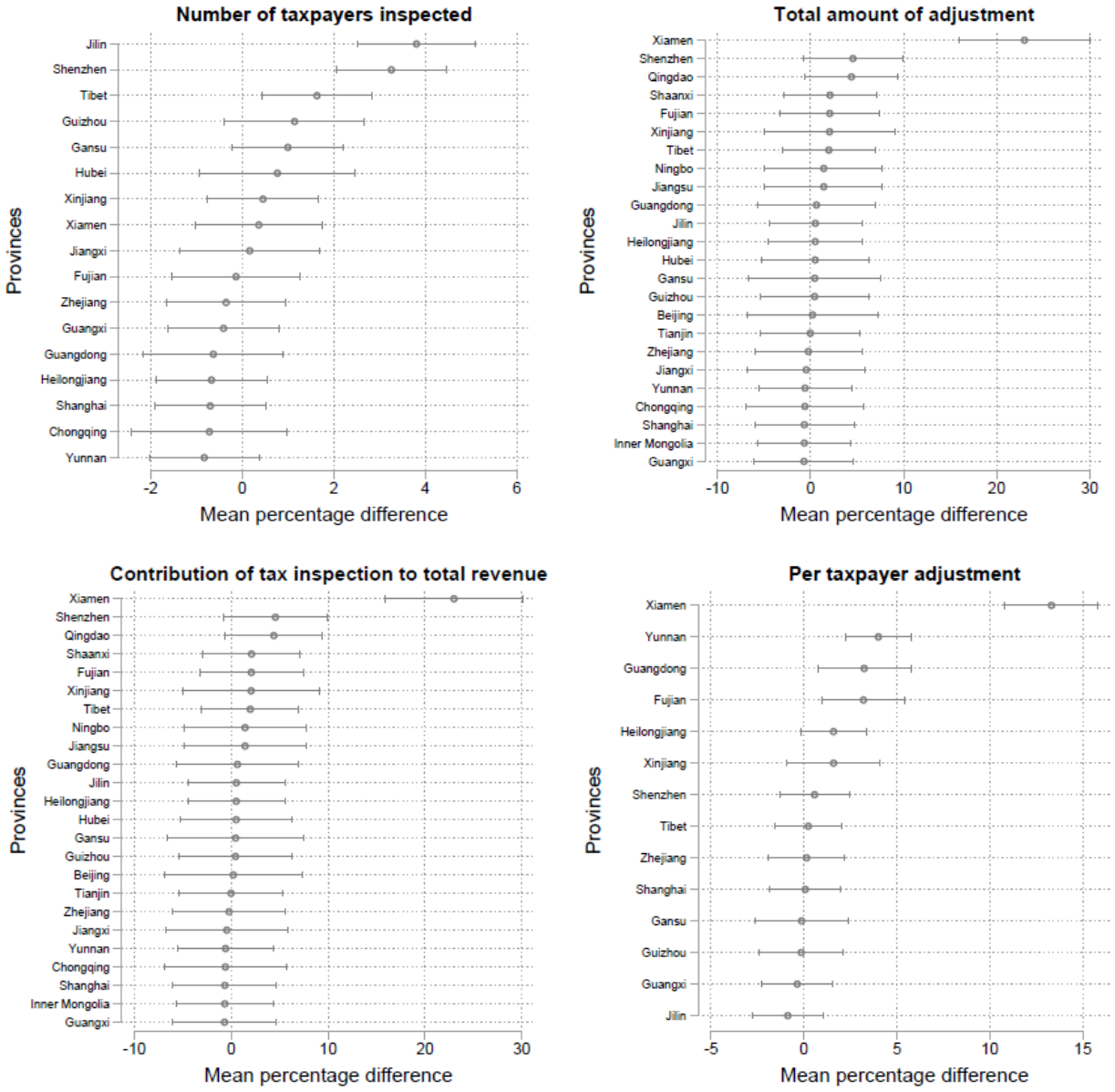
Figure A.1 Ratios of Tax Inspectors to Total Staff at Provincial Levels





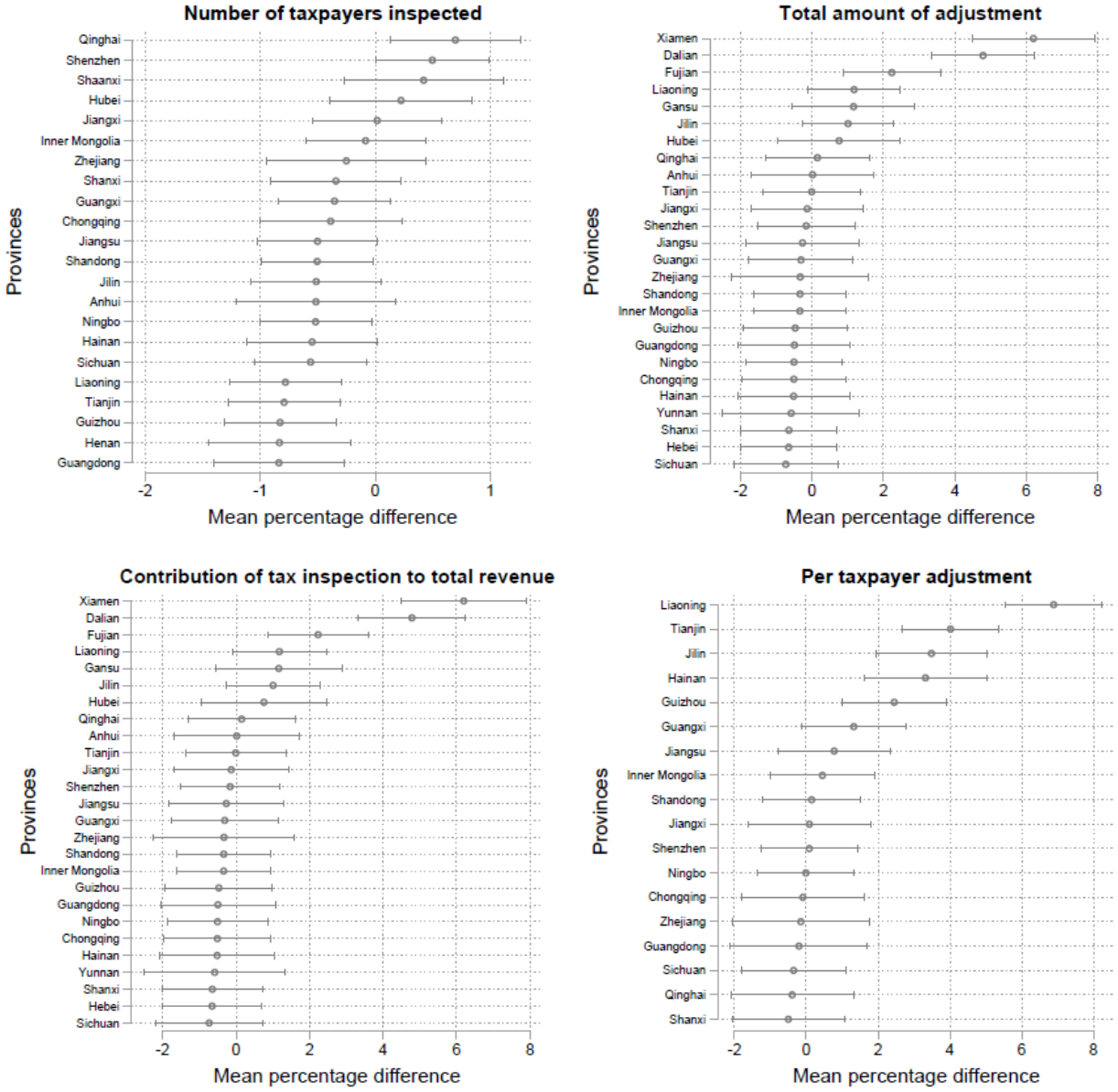
Note: Data for computing the ratios is available only for 2003-2007. The intervals for each province plot the maximum and minimum ratios, while the dot represents the 5-year average.

Figure A.2 Comparisons of Self-Inspection and Government Inspection at Provincial Level (GS)



Note: Each graph displays the average percent difference between self-inspection and government inspection variables for each province. The percent difference is calculated as (X_{self} /$X_{government}$ - 1). Positive values imply that the value of the variable for self-inspections is larger than the corresponding value for government inspections in a specific region. Spikes indicate 95% confidence intervals. If the predicted difference is not significantly different from zero, then the two types of inspections have similar values. Only regions with 4 or more observations are used. GS data. Period: 2008-2016.

Figure A.3 Comparisons of Self-Inspection and Government Inspection at Provincial Level (DS)



Note: Each graph displays the average percent difference between self-inspection and government inspection variables for each province. The percent difference is calculated as (X_{self} /$X_{government}$ - 1). Positive values imply that the value of the variable for self-inspections is larger than the corresponding value for government inspections in a specific region. Spikes indicate 95% confidence intervals. If the predicted difference is not significantly different from zero, then the two types of inspections have similar values. Only regions with 4 or more observations are used. DS data. Period: 2008-2016.